IN THE CLAIMS:

1. (Currently amended) A coated metallic implant comprising a metallic implant having a surface and an outer layer, wherein the outer layer comprises a bone analogous coating comprising a collagen matrix mineralized with a calcium phosphate phase which is adhered to said implant surface, wherein the mineralized collagen matrix is constructed in the form of layers, ~~and each layer~~ whereby at least one of said layers comprises a ~~network of~~ composite of mineralized collagen fibrils, amorphous calcium phosphate clusters and crystalline hydroxyapatite ,wherein the crystals of said crystalline hydroxyapatite have a length of about 300 to 500 nm.

2. (Cancelled)

3. (Previously presented) A coated metallic implant according to Claim 1, wherein the calcium phosphate phase of the matrix further contains ~~amorphous calcium phosphate ($Ca_9(PO_4)_6 \cdot nH_2O$), hydroxyapatite ($Ca_{10}(PO_4)_6(OH)_2$),~~ octacalcium phosphate ($Ca_8H_2(PO_4)_6 \cdot 5H_2O$), brushite ($CaHPO_4 \cdot 2H_2O$) or mixtures thereof.

4. (Previously presented) A coated metallic implant according to Claim 1, wherein the calcium phosphate phase is doped with fluoride, silver, magnesium or carbonate ions or combinations thereof.

5. (Previously presented) A coated metallic implant according to Claim 1, wherein the collagen is collagen of type I.

6. (Previously presented) A coated metallic implant according to Claim 1, wherein the collagen is a mixture of collagen of types I to III.

7. (Previously presented) A coated metallic implant according to Claim 1, wherein said coating further contains gelatin.

8. (Previously presented) A coated metallic implant according to Claim 1, further containing growth factors, peptide sequences, hormones, antibiotics or mixtures thereof.

9. (Cancelled)

10. (Previously presented) A coated metallic implant according to Claim 1, wherein the metallic implant is made of titanium or titanium alloy.

11. (Previously presented) A coated metallic implant according to claim 1, wherein said coated metallic implant is prepared by the process comprising:

1) coating a metallic implant material by immersion in a collagen solution at a pH of less than 8 and a temperature 4 - 40°C, and

2) coating said metallic implant material with a calcium phosphate phase (CPP) in an electrochemically assisted process by means of galvanostatic polarization in an electrolyte solution comprising calcium ions and phosphate ions,

wherein process steps a) and b) are performed simultaneously or sequentially.

12. (Previously presented) A coated metallic implant according to Claim 11, wherein an additional process step b) is placed in front of process step a).

13. (Previously presented) A coated metallic implant according to Claim 11, wherein the process steps a) and b) proceed alternately a number of times.

14. (Previously presented) A coated metallic implant according to Claim 11, wherein the process steps a) and b) are combined into one step, the metallic implant material to be coated being electrochemically polarized cathodically in a collagen solution comprising calcium ions and phosphate ions.

15. (Previously presented) A coated metallic implant according to Claim 11, wherein a cathodic current flow of -0.2 to -50 mA/cm^2 flows for 25 to 40 minutes during the galvanostatic polarization in process step b).

16. (Previously presented) A coated metallic implant according to Claims 11, wherein the mineralised collagen matrix is layered.

17. (Previously presented) A coated metallic implant according to Claims 11, wherein the coating further comprises gelatin.

18. (Previously presented) A coated metallic implant according to Claim 11, wherein a cathodic current flow of -0.5 to -30 mA/cm^2 flows for 30 to 40 minutes during the galvanostatic polarization in process step b).

19. (Previously presented) A coated metallic implant according to Claim 11, wherein a cathodic current flow of -1 to -10 mA/cm^2 flows during the galvanostatic polarization in process step b).

20. (Cancelled)

21. (Previously presented) A coated metallic implant according to Claim 1, wherein the outer layer is 0.04-150 nm thick.

22. (Cancelled)

23. (Currently amended) A coated metallic implant according to Claim 1 ~~2~~, wherein the metallic implant is made of titanium or titanium alloy.

24. (Currently amended) A coated metallic implant according to Claim 1, wherein the outer layer is 0.04-150 nm thick and ~~the calcium phosphate phase contains~~ said crystals ~~from 300-500 nm in length and from~~ have a diameter of 50-60 nm ~~in diameter~~.

25. (Previously presented) A coated metallic implant according to Claim 24, wherein the metallic implant is made of titanium or titanium alloy.

26. (Previously presented) A coated metallic implant comprising a metallic implant and a coating made of a collagen matrix mineralized with a calcium phosphate phase

wherein the calcium phosphate phase is doped with fluoride, silver, magnesium or carbonate ions or combinations thereof and

the collagen is a mixture of collagen of types I to III.

27. (Previously presented) A coated metallic implant according to Claim 1, wherein the coating is obtained by precipitating calcium phosphate from a solution in the presence of collagen.